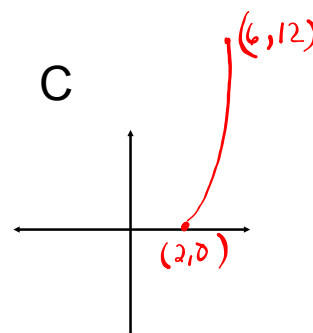
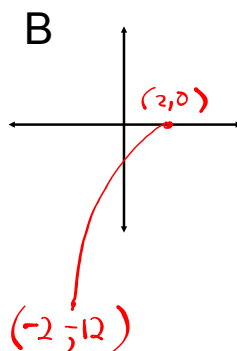
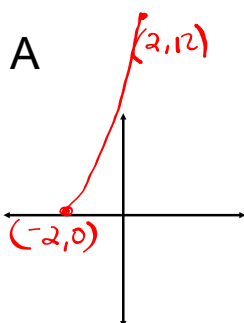
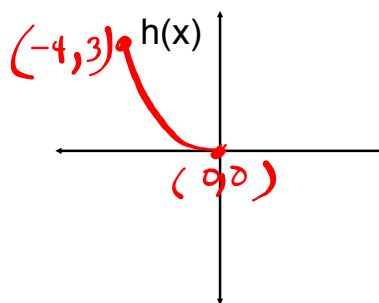


Precalc Warm Up # 7- 5

Check out a grapher for the test.

Given the graph of $y = h(x)$,
which is the graph of

$$y = 4h(2-x) ?$$

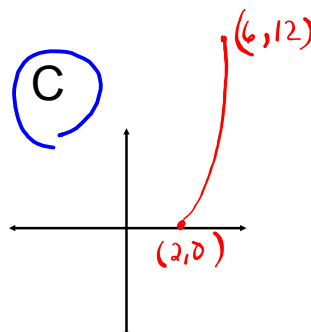
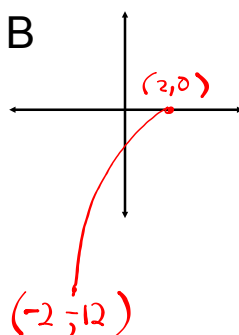
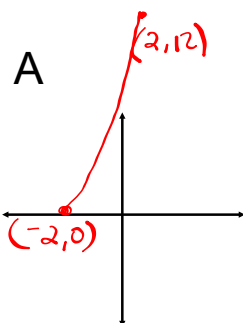
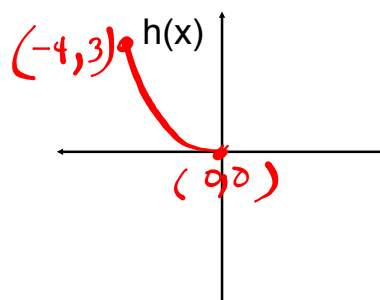


Given the graph of $y = h(x)$, which
is the graph of $y = 4h(2-x)$? $\rightarrow 4h(-(x-2))$

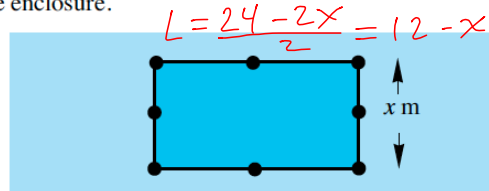
d: vertical stretch
of 4

r: r_y

s: R+2



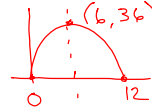
2. A small rectangular enclosure is to be placed in a paddock. There is 24 m of fencing available for the enclosure.



- (a) i. If x m is the length of one of the sides, show that the area, A m², is given by $A = x(12 - x)$. *See above dimensions.*
- ii. What restrictions need to be placed on x ? $0 < x < 12$
- (b) Find the area of this enclosure when
- i. $x = 2$ ii. $x = 4$ iii. $x = 8$
- (c) Sketch the graph of the function $A(x)$ for its specified domain.
- (d) Find the dimensions of the enclosure that will have the largest possible area.

i) $A(2) = 2(12 - 2) \dots$

c) $A(x) = x(12 - x); 0 < x < 12$

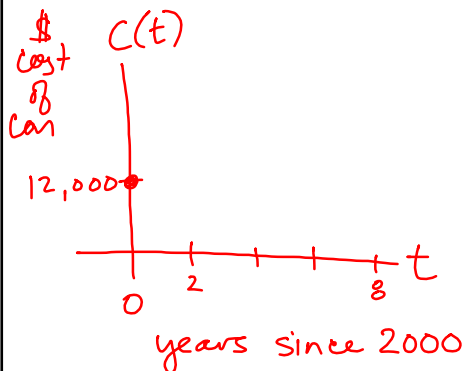


d) Max Area at the vertex
6 m by 6 m

3. $C(t) = 12,000 + 25t^2$, $t = 0$ in 2000

a) graph:

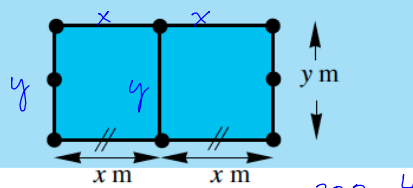
b) $C(6) =$



5. Kow Boy has decided to use the 200 m of left over fencing to create a rectangular enclosure that consists of two adjacent sections as shown below.

$$4x + 3y = 200$$

$$\frac{3y}{3} = \frac{200 - 4x}{3}$$



- (a) Find an expression for y in terms of x . $\rightarrow y = \frac{200 - 4x}{3}$
- (b) Let the area of the combined enclosures be $A \text{ m}^2 \rightarrow A(x) = 2x \left(\frac{200 - 4x}{3} \right)$

- $0 < x < 50$
- i. Show that $A = \frac{8}{3}x(50 - x)$.
- ii. What restrictions need to be placed on x ?
- i. What is the maximum area that the combined enclosures have?
- ii. What are the dimensions of the enclosure with the maximum area?
- Max @ vertex $(25, \frac{5000}{3})$
- Max area = $\frac{5000}{3} \text{ m}^2$
- $= \frac{2}{3}x(200 - 4x)$
- $= \frac{2}{3}x \cdot 4(50 - x)$
- $= \frac{8}{3}x(50 - x)$

9. $y = \frac{3}{5}x$ O, B, C

$y = -(x - 5)^2 + 5$ A, B, C

$$\frac{3}{5}x = -(x - 5)^2 + 5$$

$$\frac{3}{5}x = -(x^2 - 10x + 25) + 5$$

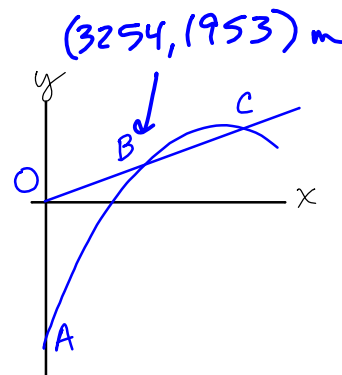
$$\frac{3}{5}x = -x^2 + 10x - 20$$

$$3x = -5x^2 + 50x - 100$$

$$0 = -5x^2 + 47x - 100$$

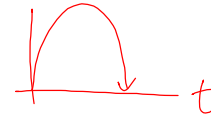
$$\downarrow$$

$$x$$



- 12.** The height, $h(t)$ metres, of a stone above ground level, t seconds, after it has been projected vertically upwards is given by the equation

$$h(t) = 120t - 10t^2, t \geq 0.$$



- (a) Calculate its height $\nearrow h(2) =$
- i. after 2 seconds ii. after 4 seconds
- (b) i. At what times will the stone reach a height of 40 metres?
 ii. How long was it between the times when the stone was 40 metres from ground level?
- (c) How long did it take for the stone to come back to ground level?
- (d) What was the maximum height reached by the stone?

bi) $40 = 120t - 10t^2$

$$10t^2 - 120t + 40 = 0$$

↓

HW: PC book

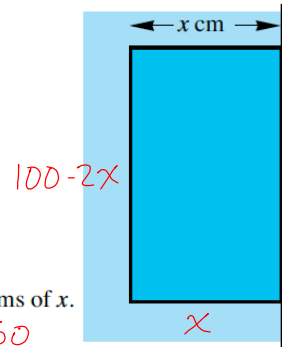
p.180 #7 - 51 □, 48

PC book all next week

p. 73

1. Bobby has decided to start a vegetable garden so that he may sell his produce at the local Sunday market. He buys 100 metres of wirenetting to fence off a rectangular area using an existing fence for one side of the rectangle.

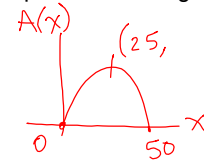
Bobby wishes to fence off the largest possible area. Let the length of one side of the rectangle be x m as shown in the diagram.



- (a) i. Find the length of the other dimension in terms of x .
 ii. What values can x take? $0 < x < 50$
- (b) Let $A \text{ m}^2$ denote the area of the enclosure.
 i. Find an expression for A in terms of x . $A(x) = x(100 - 2x)$
 ii. What are the dimensions of the enclosure if it has an area of 800 m^2 ?
 iii. What is the largest possible area that the enclosure can have?
 iv. What are the dimensions of the enclosure that produce the largest area?

ii) $800 = x(100 - 2x)$ Solve for x

iii) $x(100 - 2x) \rightarrow \text{Max @ vertex} \rightarrow$
 find y coordinate of the vertex



I can clean a park in 4 hours, but it takes my little sister 6. How long will it take her to clean it if I start helping her an hour after she starts?

Let $x = \#$ number of hrs she works

$x-1 = \dots \dots \dots$ I work

Her rate: $\frac{1}{6}$ of job done per hr

my rate: $\frac{1}{4}$ of job done per hr

$$\frac{1}{6}x + \frac{1}{4}(x-1) = 1$$

$$2x + 3(x-1) = 12$$

$$2x + 3x - 3 = 12$$

$$5x = 15$$

$$x = 3 \text{ hrs}$$

Find the x-intercept(s) and the y-intercept(s).

$$4x^2 + 5y + 2xy - 100 = 0$$

x-int when $y=0 \rightarrow 4x^2 + 5(0) + 2x(0) - 100 = 0$

$$4x^2 - 100 = 0$$

$$x^2 = 25$$

$$x = \pm 5$$

$$(5, 0) \text{ and } (-5, 0)$$

y-int when $x=0$

$$4(0)^2 + 5y + 2(0)y - 100 = 0$$

$$5y - 100 = 0$$

$$y = 20 \rightarrow (0, 20)$$

$$h(x) = \sqrt{6-x} \quad \text{and} \quad g(x) = \sqrt{2x+8}$$

Find the domain of $h(x) - g(x)$.

$$d_h: 6-x \geq 0$$

$$6 \geq x$$

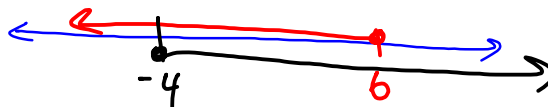
$$x \leq 6$$

$$d_g: 2x+8 \geq 0$$

$$2x \geq -8$$

$$x \geq -4$$

find the intersection of the
2 domains



$$[-4, 6]$$